on 3 dates; between the 55th and 65th meridians on 7 dates; and west of the 65th meridian on 2 dates. Compared with the corresponding month of the last 3 years the dates of occurrence of fog near the Grand Banks in February, 1891, numbered 11 less than the average; between the 55th and 65th meridians 1 more than the average; and west of the 65th meridian 4 less than the average. On the dates fog was reported east of the 55th meridian general storms were central in the Gulf of Saint Lawrence. On the dates fog was reported west of the 55th meridian it occurred with the approach or passage to the northward of general storms. Dense fog was reported at points along the New England, New York, and New Jersey coasts on the 1st, 3d, 6th to 9th, 16th to 18th, 20th to 22d, 25th, and 26th, with the approach or passage to the northward of storms whose influence extended off the coast.

OCEAN ICE IN FEBRUARY.

Ice was reported more than 1° north and about 1½° west of the average southern and eastern limits of Arctic ice for February. The southernmost ice was floe ice, in the position given, on the 22d. The easternmost ice reported was a large iceberg, in the position given, on the 5th. In February, 1888 and 1889, no icebergs were reported near Newfoundland and the Grand Banks. In each of the years named field ice was reported over and near the Grand Banks, and in 1889 Gulf ice was encountered south of Newfoundland. On the 5th, 8th, 14th, 15th, 18th, and 22d of the current month Gulf ice was reported between Cape Breton Island and Newfoundland.

The ice reported for February, 1891, was deficient when compared with the average quantity reported for the corresponding month of the last eight years.

The following table shows the southern and eastern limits of the region within which icebergs or field ice were reported for February during the last 9 years:

Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
	° ′	° ′		° ′	° ′
February, 1883	42 01	52 46	February, 1883	46 10	45 44
February, 1884	42 00	50 00	February, 1884	46 50	43 45
February, 1885	41 50	51 12	February, 1885	47 52	42 00
February, 1886	46 10	47 15	February, 1886	48 00	44 47
February, 1887	40 00	48 00	February, 1887	46 26	41 50
February, 1888	44 59	45 08	February, 1888	44 59	45 08
February, 1889	45 35	48 00	February, 1889	45 35	48 00
February, 1890	41 12	50 12	February, 1890	44 30	35 30
February, 1891	44 20	48 00	February, 1891	44 33	44 59
Average	43 07	48 57	Average	46 07	43 31

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

Many of the voluntary stations do not have standard thermometers or shelters.

The distribution of mean temperature over the United States and Canada for February, 1891, is exhibited on Chart II by dotted isotherms. In the table of Signal Service data the monthly mean temperature and the departure from the normal are given for regular stations of the Signal Service. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Signal Service represents the mean of the maximum and minimum temperatures.

The mean temperature was highest over south Florida, where it was above 70, and it was above 60 in south Georgia, and along the east and west Gulf coasts. The mean temperature was lowest in extreme north Minnesota, North Dakota, and northeast Montana, where it was below 0 (zero), and in the British Possessions north of east Montana it was below —10. The mean temperature was 10 or below from Minnesota westward over Montana, in the lower Saint Lawrence valley, in north Ontario, in the north part of the upper lake region, and at elevated stations in central Colorado, and it was below 30 in New England, save in southeast and extreme south parts, and north of a line traced thence south of west to southeast Colorado, thence southward to central New Mexico, thence northwestward to east California in about latitude north 38°, and thence northward over Oregon and Washington.

The mean temperature was above the normal east of a line traced from Lake Superior southwestward to extreme west Texas; to the west of this line the mean temperature was below the normal. The greatest departure above the normal temperature occurred from the lower lake region to the North Carolina coast, where it was more than 5, and the most marked departure below the normal temperature was noted on the northeast slope of the Rocky Mountains, where it exceeded 10. The mean temperature was below the normal at Father Point, Quebec, and at Cape Breton Island.

A severe cold wave swept over the Dakotas and Minnesota on the 2d. On the 8th a severe cold wave extended over south Wyoming, east Colorado, and Nebraska. The mornings of the 9th and 10th were the coldest ever known for the season in southwest Texas, New Mexico, and southwest Colorado. At the following-named stations the temperature was the lowest ever reported for the first decade of February: Montrose, Colo., —12, 16 below; Santa Fé, N. Mex., —6, 3 below; Fort Grant, Ariz., 14, 5 below; El Paso, Tex., 18, 2 below; Fort Stanton, N. Mex., 6, 7 below; San Antonio, Tex., 26, 1 below; and Corpus Christi, Tex., 34, 1 below. The morning of the 10th the temperature was 20 below the normal over the greater part of east Texas. On the 17th the weather was the warmest on record for the season in Maryland, the District of Columbia, the west parts of Virginia and the Carolinas, and in north Georgia. At the following-named stations the maximum temperature was higher than previously reported for the second decade of February: Baltimore, Md., 74, 2 above; Washington City, 74, 1 above; Lynchburgh, Va., 74, 1 above; Raleigh, N. C., 76, 5 above; Chattanooga, Tenn., 76, 2 above; and Atlanta, Ga., 76, 1 above. During the 17th and 18th the temperature was more than 20 above the normal in the districts named, and the morning of the 18th it was 34 above at Washington City. A cold wave extended over the east and west Gulf states on the 26th and 27th. In north Florida the morning of the 27th was one of the coldest on record for the season, the minimum temperature at Jacksonville, 30, being 2 lower than previously recorded for the latter part of February. Extremely cold weather also prevailed in northwest Montana, where the minimum was —34 at Fort Assinniboine, which was 12 lower than any previous record for the season of the year.

The seasonal temperature, January and February, 1891, averaged about as follows: In the middle and south Atlantic and New England states the temperature continued above the normal, and the seasonal departure was 2 to 3. The temperature also continued above the normal in the west Gulf states, the Rio Grande Valley, the Ohio Valley and Tennessee, and the Lake region, the seasonal departure being 4 to 5 in the Ohio Valley and Tennessee and the Lake region. In the extreme northwest, where the mean temperature for January was 20 above the normal, the mean for February was nearly 3 below the normal, and the seasonal departure was about 8 above the normal. The temperature continued above the normal in the upper Mississippi valley, where the seasonal departure was nearly 5. In the Missouri Valley and on the northeast and middle-eastern slopes of the Rocky Mountains the excess

in January gave way to a deficiency in temperature in February. On the southeast slope of the Rocky Mountains the temperature continued above the normal, and the seasonal departure was about 2. Over the southern and middle plateau regions the temperature continued below the normal, and the seasonal departure was about 3. Over the northern plateau region and on the Pacific coast the excess in temperature for January gave way to a deficiency in February. The seasonal temperature continued in excess over the northern plateau and on the north Pacific coasts, and it was less than 1 below the normal on the middle and south Pacific coasts.

At Jacksonville, Fla., the highest mean temperature ever noted for February was recorded in 1891, when the mean was nearly 6 above the normal, and nearly 1 higher than the highest mean temperature previously reported for February, noted in 1890. In the middle and south Atlantic and south New England states, in the interior of the east Gulf states, generally in Louisiana, and on the west Gulf coast the warmest February occurred in 1890, when the mean temperature was 5 to 7 above the normal in south New England, 5 to 8 above in the middle and south Atlantic and the interior of the east Gulf states, 5 above in north Louisiana, and 5 to 6 above on the west Gulf coast; over the northern plateau in 1888, when the mean temperature was 6 to 13 above the normal; on the middle Gulf coast in 1887, when the mean temperature was 5 to 7 above the normal; on the middle and south Pacific coasts in 1886, when the mean temperature was 3 to 5 above the normal; on the north Pacific coast in 1885, when the mean temperature was about 6 above the normal; from the east part of the Lake region southwestward over the Ohio, middle Mississippi, and lower Missouri valleys to east-central Texas, and in the lower Rio Grande valley in 1882, when the mean temperature was 8 to 12 above the normal in the Lake region, 7 to 12 above in the Ohio, middle Mississippi, and lower Missouri valleys, Indian Territory, and east Texas, and 5 above in the lower Rio Grande valley; in north Wisconsin and upper Michigan in 1878, when the mean temperature was 14 to 18 above the normal; and in the middle Missouri valley, Minnesota, and on the Maine coast in 1877, when the mean temperature was 14 to 19 above the normal in the middle Missouri valley and Minnesota, and 5 to 8 above on the Maine coast.

At Valentine, Nebr., and San Carlos, Ariz., 6 years record, the current month was the coldest February on record, the mean temperature being 10 below the normal at Valentine and 8 below at San Carlos. Along the south part of the south Atlantic coast the coldest February occurred in 1889, when the mean temperature was 6 to 8 below the normal; on the middle and north Pacific coasts, and from the north Pacific coast to the Dakotas, in 1887, when the mean temperature was 5 to 6 below the normal on the middle Pacific coast, 7 to 9 below on the north Pacific coast, about 11 below over the northern plateau, and 14 to 19 below in Montana and the west part of the Dakotas; from the Rocky Mountain slope eastward, south of the 40th parallel, to the Atlantic coast (save along the south part of the south Atlantic coast), and in New York and south New England in 1885, when the mean temperature was 7 to 13 below the normal in the middle Atlantic states, 7 to 9 below in the north part of the south Atlantic states, 10 to 14 below in the Ohio Valley, 6 to 12 below in the middle and lower Mississippi valleys, and 5 to 10 below in the Gulf states; in the Red River of the North Valley in 1884, when the mean temperature was 7 to 9 below the normal; in north Utah and Wyoming and thence to west Nebraska and west Kansas in 1883, when the mean temperature was 5 to 11 below the normal; from the south Pacific coast over the southern plateau in 1882, when the mean temperature was 4 to 10 below the normal; and from the middle Missouri valley eastward over the Lake region and north New England in 1875, when the mean temperature was 10 to 17 below the normal in the Missouri Valley, 12 to 16 below in the upper Mississippi valley and the Lake region, and 4 to 5 below in Maine.

In 1887, when the mean temperature was the highest ever noted for February on the middle Gulf coast, it was the lowest ever recorded for that month on the middle and north Pacific coasts, over the northern plateau, and on the northeast slope of the Rocky Mountains. In 1882, when the February mean was the highest noted for that month from the east part of the Lake region southwestward to east-central Texas, the month was the coldest February on record on the south Pacific coast and over the southern plateau region.

DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for February for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for February, 1891; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for February, during the period of observation and the years of occurrence:

State and station.	County.	(1) Normal for the month of Feb.	(2) Length of record.	(3) Mean for Feb., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for Feb.			
						Highest.	Year.	Lowest.	Year.
Arkansas.		°	*Years*	°	°	°		°	
Lead Hill	Boone	39.9	9	41.4	+ 1.5	49.9	1882	32.2	1885
California.									
Sacramento	Sacramento	50.1	35	43.6	— 6.5	55.0	1877, '79	43.3	1890
Connecticut.									
Middletown	Middlesex	26.8	23	31.5	+ 4.7	34.5	1867	17.7	1885
Florida.									
Merritt's Island	Brevard	65.9	9	68.8	+ 2.9	72.6	1883	58.0	1889
Georgia.									
Forsyth	Monroe	52.1	17	56.9	+ 4.8	59.6	1890	44.5	1885
Illinois.									
Peoria	Peoria	29.4	35	31.8	+ 2.4	39.3	1882	15.5	1875
Riley	McHenry	22.3	35	25.1	+ 2.8	32.4	1882	4.7	1875
Indiana.									
Vevay	Switzerland	36.0	24	40.5	+ 4.5	45.5	1882	25.1	1885
Iowa.									
Cresco	Howard	15.6	19	12.6	— 3.0	31.3	1878	1.0	1875
Monticello	Jones	21.5	38	21.6	+ 0.1	34.6	1878	7.5	1875
Logan	Harrison	24.1	17	18.7	— 5.4	35.2	1877	12.6	1875
Kansas.									
Lawrence	Douglas	32.0	27	29.4	— 2.6	41.6	1882	20.8	1885
Wellington	Sumner	32.4	12	34.7	+ 2.3	40.1	1882	24.6	1885
Louisiana.									
Grand Coteau	Saint Landry	59.0	8	61.8	+ 2.8	64.6	1887	52.4	1885
Maine.									
Orono	Penobscot	18.8	21	22.2	+ 3.4	25.0	1877	13.3	1885
Maryland.									
Cumberland	Allegany	31.2	32	38.0	+ 6.8	40.0	1890	19.4	1868
Massachusetts.									
Amherst	Hampshire	24.8	55	29.4	+ 4.6	32.4	1890	16.5	1843
Newburyport	Essex	26.8	11	30.8	+ 4.0	31.3	1890	19.3	1885
Somerset	Bristol	28.1	18	34.7	+ 6.6	35.3	1890	19.6	1885
Michigan.									
Kalamazoo	Kalamazoo	25.6	15	31.2	+ 5.6	35.0	1882	11.2	1885
Thornville	Lapeer	24.5	14	29.8	+ 5.3	34.8	1882	10.6	1885
Minnesota.									
Minneapolis	Hennepin	14.1	26	10.8	— 3.3	29.9	1877	— 2.6	1875
Montana.									
Fort Shaw	Lewis & Clarke	25.1	21	7.8	—17.3	39.6	1877	2.4	1887
New Hampshire.									
Hanover	Grafton	18.6	54	23.7	+ 5.1	27.2	1840	10.8	1885
New Jersey.									
Moorestown	Burlington	31.4	27	38.0	+ 6.6	39.4	1890	21.6	1885
South Orange	Essex	29.8	20	35.1	+ 5.3	37.0	1890	22.8	1885
New York.									
Cooperstown	Otsego	21.1	37	25.9	+ 4.8	31.7	1857	10.5	1885
Palermo	Oswego	21.7	37	27.4	+ 5.7	27.8	1859	9.8	1885
North Carolina.									
Lenoir	Caldwell	40.2	18	45.2	+ 5.0	49.0	1890	30.3	1875
Ohio.									
N'th Lewisburgh	Champaign	30.2	59	35.3	+ 5.1	42.0	1851	19.0	*
Wauseon	Fulton	25.6	21	31.0	+ 5.4	35.4	1882	11.3	1875
Oregon.									
Albany	Linn	40.6	12	37.2	— 3.4	47.9	1885	32.7	1887
Eola	Polk	39.8	20	35.7	— 4.1	46.5	1885	31.0	1887
Pennsylvania.									
Dyberry	Wayne	22.3	26	27.1	+ 4.8	30.1	1890	13.3	1868
Grampian Hills	Clearfield	24.3	26	30.5	+ 5.7	33.8	1890	13.7	1885
Wellsborough	Tioga	26.5	11	29.8	+ 3.3	34.0	1890	16.7	1885
South Carolina.									
Statesburgh	Sumter	50.0	10	54.4	+ 4.4	56.6	1890	41.8	1885
Tennessee.									
Austin	Wilson	43.2	22	46.5	+ 3.3	51.4	1890	32.9	1885
Texas.									
New Ulm	Austin	56.4	17	57.5	+ 1.1	62.0	1882	52.6	1883
Vermont.									
Strafford	Orange	18.2	17	22.4	+ 4.2	25.7	1877	11.0	1885
Virginia.									
Birdsnest	Northampt'n	41.2	22	47.1	+ 5.9	50.2	1890	33.9	1889
Washington.									
Fort Townsend	Jefferson	40.4	19	33.7	— 6.7	47.0	1885	31.7	1887
Wisconsin.									
Madison	Dane	20.8	24	21.9	+ 1.1	32.8	1878	8.1	1885

* 1838, 1856, and 1875.

MAXIMUM AND MINIMUM TEMPERATURES.

The highest temperature reported by a regular station of the Signal Service was 97, at Rio Grande City, Tex., on the 24th. The maximum temperature was above 80 along the south part of the south Atlantic coast, in southeast Alabama, and in the west Gulf states, and was above 70 south of the Ohio and lower Missouri rivers, on the southeast slope of the Rocky Mountains, and in south California and southwest Arizona. The lowest maximum temperature was reported along the northern border of the country between the 95th and 119th meridians. The reports of United States Army post surgeons and voluntary observers show the following maximum temperatures in states and territories where temperature rising to or above 80 was reported: Fort Ringgold, Tex., 99; Eustis, Fla., 91; Vaiden, Miss., 86; Fort Sill, Okla. T., Florence, Ariz., and Cheneyville, La., 85; Volcano Springs, Cal., Louisville, Ga., and Fort Supply, Ind. T., 84; Jacksonborough, S. C., Richmond, Va., and Central City, Ky., 83; Citronelle, Ala., 82; Marshallberg, N. C., 81; and Englewood, Kans., 80. At the following-named stations of the Signal Service the maximum temperature was as high or higher than previously reported for February: Charleston, S. C., 80, the same as 1887; Savannah, Ga., 84, 3 above 1889; Jacksonville, Fla., 86, 2 above 1887; Atlanta, Ga., 78, 3 above 1889; Montgomery, Ala., 83, 2 above 1883; Galveston, Tex., 75, the same as 2 or more years; Rio Grande City, Tex., 97, 1 above 1887; Palestine, Tex., 82, the same as 1886; Shreveport, La., 81, the same as 1889; Fort Sill, Okla. T., 85, 6 above 1879; Little Rock, Ark., 78, the same as 2 or more years; Fort Smith, Ark., 80, 2 above 1883; Keokuk, Iowa, 70, 1 above 1882; and Escanaba, Mich., 41, the same as 2 or more years.

The lowest temperature reported by a regular station of the Signal Service was —36, at Fort Custer, Mont., on the 2d. The minimum temperature was below —30 over northwest Minnesota, north North Dakota, and east and central Montana, and was below zero over north New England, northeast New York, and north of a line traced from lower Michigan irregularly southwestward to south New Mexico, and thence irregularly northwestward to north Idaho. The minimum temperature was highest over extreme south Florida, where it was above 55, and it was 40 or above in extreme south Louisiana, at the mouth of the Rio Grande River, and at San Francisco, Cal. The reports of United States Army post surgeons and voluntary observers show the following minimum temperatures in the states and territories where temperature falling to or below zero was reported: Breckenridge and Gunnison, Colo., —46; Pine River, Minn., —44; Rhinelander, Wis., —40; Wahpeton, N. Dak., —39; Powder River, Mont., —35; Henry's Lake, Idaho, —34; Fort Meade, S. Dak., —32; Cresco, Iowa, and Fort Brady, Mich., —31; Fort Niobrara, Nebr., —30; West Milan, N. H., —28; Fairfield, Me., and Fort Fetterman, Wyo., —25; Halleck, Nev., —23; Monero, N. Mex., —22; Mount Pleasant and Nephi, Utah, —19; Chelsea and Saxton's River, Vt., —17; Turin, N. Y., —16; Truckee (2), Cal., —15; Cockrell and Lanark, Ill., and Pickering, Mo., —13; Heath, Mass., and La Fayette, Ind., —12; Seneca, Kans., —10; Dyberry, Pa., —7; Waterville, Wash., —6; Canton and New Hartford (1), Conn., —5; Lakeview, Oregon, —4; Garrettsville and Granville, Ohio, —2; Cooley's, Ariz., —1; Caddo, Ky., 0. At the following-named stations of the Signal Service the minimum temperature was as low or lower than previously reported for February: Fort Stanton, N. Mex., —3, 7 below 1884; Santa Fé, N. Mex., —6, 3 below 1880; and San Diego, Cal., 34, 1 below 1880.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart IV by a line traced just inside the coast line at Hatteras, N. C., a line traced over north Florida, and a line traced just inside the west Gulf coast line. The western limit of freezing weather is shown by a line traced from Yuma, Ariz., northwestward inside the Pacific coast line to the 40th parallel.

RANGES OF TEMPERATURE.

The greatest and least daily ranges of temperature are given in the table of Signal Service data. The greatest monthly ranges of temperature occurred along the northeast and middle-eastern slopes of the Rocky Mountains, where they exceeded 75, whence they decreased eastward to less than 45 on the southeast New England coast, southeast to less than 30 in extreme south Florida, to less than 45 on the middle Gulf coast, and to less than 50 on the west Gulf coast, westward to less than 25 on the middle Pacific coast, and to less than 20 on the north Pacific coast.

FROST.

Frost was not reported as far south as in the preceding month. In January frost was noted in Florida as far south as Lee county on a number of dates, while for the current month no frost was reported in Florida south of the 29th parallel. In Texas it occurred in the lower Rio Grande valley in January, while in February it was not reported south of the 29th parallel. On the Pacific coast frost occurred as far south as San Diego, Cal., in January, while for the current month it was noted about 1° farther north. In the Gulf States and north Florida the cold weather of the 26th and 27th injured early fruit and vegetables, and at points in the east Gulf and south Atlantic states the temperature on the morning of the 27th was the lowest of the season.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for February, 1891, as determined from the reports of nearly 2,000 stations, is exhibited on Chart III. In the table of Signal Service data the total precipitation and the departure from the normal are given for each Signal Service station. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

Monthly precipitation to exceed 10.00 was reported along the Pacific coast between the 39th and 45th parallels, in the interior of California between the 38th and 40th parallels, in Santa Cruz Co., Cal., and in San Diego Co., Cal., east and north of San Diego. In parts of California and Arizona the rainfall was remarkably heavy. In the extreme northwest part of California the precipitation exceeded 20.00; at Boulder Creek, Santa Cruz Co., 34.03 was reported; and at Cuyamaca, San Diego Co., a depth of 32.20 was reported. The monthly precipitation also exceeded 10.00 in Yavapai Co., central Arizona, at Alta, Salt Lake Co., Utah, and in southeast Louisiana, central, northeast, and extreme south Mississippi, east-central and northwest Alabama, extreme north Georgia, extreme west North Carolina, and east Tennessee. At a number of stations in west Texas and east Colorado no precipitation was reported. The monthly precipitation was generally less than 0.50 in the Rio Grande Valley and on the east slope of the Rocky Mountains, and was less than 1.00 in areas between the 95th meridian and the Rocky Mountains, in northwest Ontario, and northeast and southwest Florida.

The precipitation was in excess of the February average on the Pacific coast south of the 45th parallel, over the northern, southern, and the west parts of the middle plateau regions, from the north part of the southern plateau northeastward to the upper lake region, thence southward over the middle and